Inverse	Kinematics	7
	[Cu Cu Cu Px]	52 C34 - C2 534 - S2 04 C2 C34 + 03 C2 C3 S34 C34 0 04 S34 + 03 S3 - d2 S2 C34 - S2 S34 C2 04 S2 C34 + d1 + 03 S2 C3
	C. C12 C23 Py 0 T	S34 C34 0 94 S34 + 93 S3 - 02
	(31 (32 33 Pz	S2 C54 - S2 S54 C2 a4 S2 C34 + d1 + 23 S2 C3
	0 0 0 1	0 0 0 1
	Goal ot	
	ovar \$	
	Want to find: di, Oz,	Os, O4 as functions of known values
	Known values: - Goals: r.,	
		s: d2, 013, a4
1.	V	-, -, -, -, -, -, -, -, -, -, -, -, -, -
F°T(d,)] -1 oT = [oT(d1)] -1	° T = 'T
	Goal	3
F1 0	0 7 [0 0 0 0 7	[1000] [c2c34 -c2534 -52 a4 c2c34 +a362
0 1	0 0 \(\Gamma_{21} \cappa_{23} \text{Pg}\)	$\begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 \end{bmatrix} \begin{bmatrix} c_2 c_{34} & -c_2 s_{34} & -s_2 & a_4 c_2 c_{34} + a_3 c_2 \\ 0 & 1 & 0 & 0 \end{bmatrix} \begin{bmatrix} c_3 c_4 & c_3 c_4 & 0 & a_4 s_{34} + a_3 s_3 - a_3 \\ 0 & 1 & 0 & 0 \end{bmatrix}$
0 0	1 -d, (31 (31 (33 Pz	= 0 0 1 -d1 S2C34 - 52S34 C2 Q452C34+Q552C3+0
		000100001
[Cn	ſ₁	[C2 C34 - C2 S34 - S2 04 C2 C34 + 03 C2 C3
r ₂₁	C22 C23 Py - 1-	C ₂ C ₃₄ - C ₂ S ₃₄ - S ₂ α ₄ C ₂ C ₃₄ + α ₃ C ₂ C ₃ S ₃₄ C ₃₄ ο α ₄ S ₃₄ + α ₃ S ₃ - d ₂ S ₂ C ₃₄ - S ₂ S ₃₄ C ₂ α ₄ S ₂ C ₃₄ + α ₃ S ₂ C ₃
r ₃₁	1 132 133 Pz-d1	52C34 -52534 C2 9452C34 + 9352C3
0	0 0 1	0 0 0 1
	Pz-d1 = 0452634	+ a3 S2 C3
	d1 = Pz - a45	52 C54 - a352 C3 (1)
	\(\Gamma_{23} = 0\)	
		to A = - (3)
	$C_{13} = -S_2 \rightarrow S_2 = -C_{13}$	$ \begin{cases} \tan \theta_z = \frac{-r_{13}}{r_{33}} \Rightarrow \theta_z = A \tan 2 \left(-r_{13}, r_{33}\right) \end{cases} $
	$ \begin{array}{c c} \hline & \overline{1} & \overline{2} & \overline{3} & \overline{4} \\ \hline & \overline{1} & \overline{2} & \overline{2} & \overline{2} & \overline{4} \end{array} $ $ \begin{array}{c c} \hline & \overline{1} & \overline{2} & \overline{2} & \overline{2} & \overline{4} & \overline$	+ 04) = \frac{\gamma_{21}}{\gamma_{21}} = \frac{\gamma_3 + 0_4 = A \tan 2 (\Gamma_{21}, \Gamma_{22}) \cdots (2)}{\squares (2)}
	> d1 = P2 - a4 (-	r_{13}) $r_{22} - a_3 (-r_{13}) c_3$
	di = Pz + a4 (18	5 522 + 03 53 63 (3)
		Need to find 8; to get d, and By, then everything

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Px = a4 C2 C34 + a3 C2 C3 -> C3 = Px- 94 C2 C34 - (4)
  Py = a4 534 + a3 53 - d2 -> 53 = Py - a4 534 + d2
    tan 03 = (Py-a4834+d2) 93 C2
(Px-a4 C2C34) 0/3
     Oz = Atan 2 ((Py - ay 534 + d2) Cz , Px - a4 Cz C34)
     O3 = Atan 2 ((Py-a4 [2,+d2) [33, Px-a4 [33 [22) ]--(5)
From (2) & (5):
O3 + O4 = Atan 2 (121, 132)
     OL = Atonz (121, 122) - 03
     04= Aton2 (121, (2)) - Aton2 ((Py-a412,+d2)133, Px-a413, 122)
From (3) { (4)=
    d = Pz + a4 13 122 + a3 13 C3
   d1 = Pz + a4 (15 (22 + a3 (13 ( Px - a4 (2 (34 )
   d_{1} = P_{z} + a_{4} r_{13} r_{22} + \underbrace{P_{x} r_{13}}_{C_{2}} - a_{4} c_{34} r_{13}
   d1 = Pz + au 53 522 + Px 513 - ay F22 513
   d1 = Pz + Px (3)
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